CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/MRG/W.No.14/BC/Shape.T/2016-17 22.03.2017

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

*** Customer**	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. M.R. Girish,** Gowda #48/3, 6th Cross, Srinivasanagara, Vishwaneedam (Po), Sunkadakatte, Bangalore – 560 091.
*** Name of Work**	:	Improvements to roads and drains at 10th cross and other cross roads at Manjunathanagara Ward No.14, Bagalagunte, BBMP, Bangalore.
*** Reference**	:	BBMP/DZ/AEE/TDSD/PR/600/2/2016-17 Dated: 10.01.2017
*** Sample ID**	:	Hot mix plant, Bangalore
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
*** Type of Mix**	:	Bituminous Concrete
Date of Testing	:	22.03.2017

Sl.No.	Description	Result
1	Flakiness Index	11.96%
2	Elongation Index	13.47%
3	Combined Flakiness & Elongation Index	25.43%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/MRG/W.No.14/BC/Shape.T/2016-17 22.03.2017

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

*** Customer**	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. M.R. Girish,** Gowda #48/3, 6th Cross, Srinivasanagara, Vishwaneedam (Po), Sunkadakatte, Bangalore – 560 091.
*** Name of Work**	:	Improvements to roads and drains at 10th cross and other cross roads at Manjunathanagara Ward No.14, Bagalagunte, BBMP, Bangalore.
*** Reference**	:	BBMP/DZ/AEE/TDSD/PR/600/2/2016-17 Dated: 10.01.2017
*** Sample ID**	:	Hot mix plant, Bangalore
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
*** Type of Mix**	:	Bituminous Concrete
Date of Testing	:	22.03.2017

Sl.No.	Description	Result
1	Flakiness Index	11.47%
2	Elongation Index	13.96%
3	Combined Flakiness & Elongation Index	25.43%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

****

Civil-tech Consultants & Engineers
#23/14, 7th Cross, 3rd Stage, 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಟಿ.ದಾಸರಹಳ್ಳಿ ಉಪ-ವಿಭಾಗ
ಜಾಗಲಗುಂಟೆ, ಬಿಬಿಎಂಪಿ
ಬೆಂಗಳೂರು

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/MRG/W.No.14/BC/Stripping/2016-17 24.03.2017

TEST REPORT ON STRIPPING VALUEOF ROAD AGGREGATES (STATIC IMMERSION TEST)

*** Customer**	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. M.R. Girish,** Gowda #48/3, 6th Cross, Srinivasanagara, Vishwaneedam (Po), Sunkadakatte, Bangalore – 560 091.
*** Name of Work**	:	Improvements to roads and drains at 10th cross and other cross roads at Manjunathanagara Ward No.14, Bagalagunte, BBMP, Bangalore.
*** Reference**	:	BBMP/DZ/AEE/TDSD/PR/600/2/2016-17 Dated: 10.01.2017
Technical Reference	:	IS: 6241
*** Type of Mix**	:	Bituminous Concrete
Date of Testing	:	24.03.2017

Type of binder : 80/100
Percentage of binder used : 5.00% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.00 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.4	3.30	96.70
2	3.2		
3	3.3		

*Information is furnished by the Customer/Representative.

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

****

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಟಿ.ದಾಸರಹಳ್ಳಿ ಉಪ-ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ, ಬಿಬಿಎಂಪಿ
ಬೆಂಗಳೂರು

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/MRG/W.No.14/BC/Sp_Wa/2016-17

24.03.2017

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

*** Customer**	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. M.R. Girish,** Gowda #48/3, 6th Cross, Srinivasanagara, Vishwaneedam (Po), Sunkadakatte, Bangalore – 560 091.
*** Name of Work**	:	Improvements to roads and drains at 10th cross and other cross roads at Manjunathanagara Ward No.14, Bagalagunte, BBMP, Bangalore.
*** Reference**	:	BBMP/DZ/AEE/TDSD/PR/600/2/2016-17 Dated: 10.01.2017
*** Sample ID**	:	Hot mix plant, Bangalore
Technical Reference	:	IS : 2386(Part -3)-1963 (RA-2011)
*** Type of Mix**	:	Bituminous Concrete
Date of Testing	:	24.03.2017

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	1999	2002	2000	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1245	
4	Weight of saturated surface dry aggregate in air	W_3 g	2025	2026	2024	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	786	788	779	
6	Weight of oven dried aggregate	W_4 g	2011	2010	2009	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.559	2.551	2.579	2.563
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.605	2.604	2.630	2.613
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.70%	0.80%	0.75%	0.75%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.

Tele Fax : 23223227, Website : www.civiltechconsultants.com

E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

Civil tech Consultants & Engineers #23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathinagar, Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No: CTCE/BBMP/MRG/W.No.14/BC/Bitumen/2016-17 24.03.2017

TEST REPORT ON BITUMEN CONTENT OF BITUMINOUS CONCRETE MIX

*** Customer**	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. M.R. Girish,** Gowda #48/3, 6th Cross, Srinivasanagara, Vishwaneedam (Po), Sunkadakatte, Bangalore – 560 091.
*** Name of Work**	:	Improvements to roads and drains at 10th cross and other cross roads at Manjunathanagara Ward No.14, Bagalagunte, BBMP, Bangalore.
*** Reference**	:	BBMP/DZ/AEE/TDSD/PR/600/2/2016-17 Dated: 10.01.2017
*** Sample ID**	:	10th cross road at Manjunathnagara W.No.14
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	24.03.2017

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	474	473
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	26	27.00
7. Bitumen content in %	5.20	5.40
8. Average	**5.30**	

*Information is furnished by the Customer/Representative.

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

****

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಟಿ.ದಾಸರಹಳ್ಳಿ ಉಪ-ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ, ಬಿಬಿಎಂಪಿ
ಬೆಂಗಳೂರು

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No: CTCE/BBMP/MRG/W.No.14/BC/Bitumen/2016-17 24.03.2017

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. M.R. Girish,** Gowda #48/3, 6th Cross, Srinivasanagara, Vishwaneedam (Po), Sunkadakatte, Bangalore – 560 091.
* Name of Work	:	Improvements to roads and drains at 10th cross and other cross roads at Manjunathanagara Ward No.14, Bagalagunte, BBMP, Bangalore.
* Reference	:	BBMP/DZ/AEE/TDSD/PR/600/2/2016-17 Dated: 10.01.2017
* Sample ID	:	10th cross road at Manjunathnagara W.No.14
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	24.03.2017

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	45.52	9.60	9.60	90.40	79-100
9.5	36.25	7.65	17.25	82.75	70-88
4.75	72.14	15.22	32.47	67.53	53-71
2.36	65.48	13.81	46.28	53.72	42-58
1.18	52.23	11.02	57.30	42.70	34-48
0.6	56.84	11.99	69.30	30.70	26-38
0.3	45.12	9.52	78.81	21.19	18-28
0.15	38.63	8.15	86.96	13.04	12-20
0.075	32.55	6.87	93.83	6.17	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	35.47	7.50	7.50	92.50	79-100
9.5	45.12	9.54	17.04	82.96	70-88
4.75	75.56	15.97	33.01	66.99	53-71
2.36	72.13	15.25	48.26	51.74	42-58
1.18	65.85	13.92	62.18	37.82	34-48
0.6	48.52	10.26	72.44	27.56	26-38
0.3	35.63	7.53	79.97	20.03	18-28
0.15	28.74	6.08	86.05	13.95	12-20
0.075	32.63	6.90	92.95	7.05	4-10

*Information is furnished by the Customer/Representative.

Civil-Tech Consultants & Engineers Bangalore

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

****

Civil-tech Consultants & Engineers

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.

Tele Fax : 23223227, Website : www.civiltechconsultants.com

E-mail : vishwanath.la@civiltechconsultants.com / info@civiltechconsultants.com

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathinagar, Basaveshwaranagar, Bangalore-560 079

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/MRG/W.No.14/BC/Agg/2016-17 24.03.2017

TEST REPORT ON GRADATION OF AGGREGATE

*** Customer**	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. M.R. Girish,** Gowda #48/3, 6th Cross, Srinivasanagara, Vishwaneedam (Po), Sunkadakatte, Bangalore – 560 091.
*** Name of Work**	:	Improvements to roads and drains at 10th cross and other cross roads at Manjunathanagara Ward No.14, Bagalagunte, BBMP, Bangalore.
*** Reference**	:	BBMP/DZ/AEE/TDSD/PR/600/2/2016-17 Dated: 10.01.2017
*** Sample ID**	:	Bituminous Concrete
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
*** Type of Mix**	:	Hot mix plant, Bangalore
Date of Testing	:	24.03.2017

Total Weight of Sample: **5250** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per `MORTH 500-18
13.2	740	14.10	14.10	85.90	79 - 100	
9.5	515	9.81	23.90	76.10	70 - 88	
4.75	625	11.90	35.81	64.19	53 - 71	
2.36	550	10.48	46.29	53.71	42 - 58	
1.18	515	9.81	56.10	43.90	34 - 48	
0.600	585	11.14	67.24	32.76	26 - 38	
0.300	610	11.62	78.86	21.14	18 - 28	
0.150	370	7.05	85.90	14.10	12 - 20	
0.075	355	6.76	92.67	7.33	4 - 10	

Total Weight of Sample: **5350** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH 500-18
13.2	615	11.50	11.50	88.50	79 - 100	
9.5	525	9.81	21.31	78.69	70 - 88	
4.75	650	12.15	33.46	66.54	53 - 71	
2.36	545	10.19	43.64	56.36	42 - 58	
1.18	625	11.68	55.33	44.67	34 - 48	
0.600	525	9.81	65.14	34.86	26 - 38	
0.300	560	10.47	75.61	24.39	18 - 28	
0.150	375	7.01	82.62	17.38	12 - 20	
0.075	455	8.50	91.12	8.88	4 - 10	

*Information is furnished by the Customer/Representative.

Note:

⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒Any Query regarding the report must be reported within 30 days from the date of testing.

Civil-Tech Consultants & Engineers

****

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.

Tele Fax : 23223227, Website : www.civiltechconsultants.com

E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/MRG/W.No.14/BC/Stability/2016-17 24.03.2017

TEST REPORT ON MARSHALL STABILITY OF MIX

*** Customer**	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. M.R. Girish,** Gowda #48/3, 6th Cross, Srinivasanagara, Vishwaneedam (Po), Sunkadakatte, Bangalore – 560 091.
***Name of the Work**	:	Improvements to roads and drains at 10th cross and other cross roads at Manjunathanagara Ward No.14, Bagalagunte, BBMP, Bangalore.
***Reference**	:	BBMP/DZ/AEE/TDSD/PR/600/2/2016-17 Dated: 10.01.2017
*** Source**	:	Hot mix Plant, Bangalore
*** Type of Mix**	:	Bituminous Concrete
Date of Testing	:	24.03.2017

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshall Stability, Kn	9.75	9.55	9 Kn (min)
2	Marshall flow, mm	2.20	3.45	2 – 4
3	Percent air voids in Mineral Aggregate	3.15	3.30	3 – 6
4	Voids in Compacted Mix	13.60	13.75	13 - 15
5	Percent Voids filled with Bitumen	66.45	67.50	65 - 75
6	Density, g/cc	2.27	2.26	--

*Information is furnished by the Customer/Representative.

Civil-Tech Consultants & Engineers Bangalore

Note:

⇒ The report shall not be reproduced, except in full, without the written approval of the laboratory.

⇒ The results indicated above are based on the tests carried out on the samples received in the laboratory.

⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

****

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಟಿ.ದಾಸರಹಳ್ಳಿ ಉಪ-ವಿಭಾಗ
ಆಗಲಗುಂಟೆ, ಬಿಬಿಎಂಪಿ
ಬೆಂಗಳೂರು

Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.